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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/891,576	06/25/2001	Nanping Wu	210030	3311
23460 7590 11/27/2007 LEYDIG VOIT & MAYER, LTD TWO PRUDENTIAL PLAZA, SUITE 4900 180 NORTH STETSON AVENUE CHICAGO, IL 60601-6731			EXAMINER PATEL, NIHIR B	
			ART UNIT 3772	PAPER NUMBER
			MAIL DATE 11/27/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

EP

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/891,576	WU, NANPING	
	Examiner	Art Unit	
	Nihir Patel	3772	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 9.12.2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Allowable Subject Matter*

1. The indicated allowability of claims 2, 6, 7 and 16-40 is withdrawn in view of the newly discovered reference(s). Rejections based on the newly cited reference(s) follow.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims **1, 3-7, 12, 16-20, 25, 41 and 42** are rejected under 35 U.S.C. 102(e) as being anticipated by Yamauchi et al. (US 6,189,604).
4. As to claims **1 and 17**, Yamauchi teaches an apparatus that comprises a longitudinally extending freezer plate body having a first generally planar heat transfer surface **11 (see figure 1; column 4 lines 25-35)**, a second generally planar heat transfer surface **13 (see figure 1; column 4 lines 25-35)** spaced apart from the first heat transfer surface (**see figure 1**), to define a plate body solid volume; and at least one longitudinally extending duct **8** passing through the plate body solid volume to channel a refrigerant maintained at a relatively high pressure (**see figure 1**), the duct having an elliptical cross-section which maintains a stress level in the plate body (**see figure 4**), caused by the relatively high pressure refrigerant flowing through the duct at a flow rate and pressure sufficient to reduce the temperature at the first and second heat transfer

surfaces to a freezer operating temperature, at a level substantially below the yield strength of the material from which the plate body is constructed wherein the spacing between the first and second heat transfer surfaces and the dimensions of the elliptical duct are such that the von Mises stress is less than the yield strength of the material from which the plate body is constructed when the fluid has a pressure of approximately 1400 psig (**see column 7 lines 10-20**).

5. As to **claim 3**, Yamauchi teaches an apparatus wherein at least one heat transfer surface contacts items to be frozen (**see column 6 lines 15-30**).

6. As to **claim 4**, Yamauchi teaches an apparatus wherein both heat transfer surface contacts items to be frozen (**see column 6 lines 15-30**).

7. As to **claims 5 and 18**, Yamauchi teaches an apparatus wherein the duct extends throughout substantially the entire plate body in a serpentine manner (**see figure 3**).

8. As to **claims 6 and 19**, Yamauchi teaches an apparatus wherein the plate body has a length and a width with the length substantially greater than the width and the serpentine duct extends substantially throughout the entire plate body along the length of the plate body (**see figure 3**).

9. As to **claims 7, 20 and 42**, Yamauchi teaches an apparatus wherein the serpentine duct makes seven passes through the plate body (**see figure 3**).

10. As to **claim 12 and 25**, Yamauchi teaches an apparatus wherein the refrigerant passing through the evaporator is carbon dioxide (**see column 3 lines 45-55**).

10. As to **claim 16**, Yamauchi teaches an apparatus that comprises a compartment wherein the temperature of the compartment is less than or equal to approximately zero degrees Celsius (see **column 7 lines 10-20**); and a plurality of spaced apart shelves located in the compartment with each of the shelves adapted to receive items to be frozen between the adjacent shelves, each of the shelves include a plurality of generally rectangular plates having a length and a width with the length substantially greater than the width (see **figure 4**), the plates are disposed in an abutting relationship along their respective lengths, each plate has a first generally planar heat transfer surface, to define a plate body solid volume; and at least one longitudinally extending duct passing through the plate body solid volume to channel a refrigerant maintained at a relatively high pressure (see **column 6 lines 20-30**), the duct having an elliptical cross-section which maintains a stress level in the plate body (see **figure 4**), caused by the relatively high pressure refrigerant flowing through the duct at a flow rate and pressure sufficient to reduce the temperature at the first and second generally planar heat transfer surface to a freezer operating temperature, at a level substantially below the yield strength of the material from which the plate body is constructed.

11. As to **claim 41**, Yamauchi teaches an apparatus that comprises a longitudinally extending freezer plate body having a first generally planar heat transfer surface 11 (see **figure 1; column 4 lines 25-35**), a second generally planar heat transfer surface 13 (see **figure 1; column 4 lines 25-35**) spaced apart from the first heat transfer surface (see **figure 1**), to define a plate body solid volume; and at least one longitudinally extending duct 8 passing through the plate body solid volume to channel a refrigerant maintained at a relatively high pressure (see **figure 1**), the duct having an elliptical cross-section which maintains a stress level in the plate body (see **figure 4**),

caused by the relatively high pressure refrigerant flowing through the duct at a flow rate and pressure sufficient to reduce the temperature at the first and second heat transfer surfaces to a freezer operating temperature, at a level substantially below the yield strength of the material from which the plate body is constructed wherein the duct extends throughout substantially the entire plate body in a serpentine manner (**see figure 3**), wherein the plate body has a length and a width with the length substantially greater than the width and the serpentine duct extends substantially throughout the entire plate body along the length of the plate body (**see figure 4**).

***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. Claims **8-11, 13-15, 21-24 and 26-40** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamauchi et al. (US 6,189,604).

15. As to claims 8, 21, 29, 30-33 and 37, Yamauchi substantially discloses the claimed invention, see rejection of claim 1 above, but does not disclose or provide a ratio between the total ellipse area to the total cross-sectional freezer area being between 0.57 to about 0.67. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Yamauchi's invention by providing a ratio between the total ellipse area to the total cross-sectional freezer area being between 0.57 to about 0.67 in order to improve the cooling process, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art *In re Aller*, 105 USPQ 233.

16. As to claims 9, 22 and 34, Yamauchi substantially discloses the claimed invention, see rejection of claim 1 above, but does not disclose or provide an elliptical duct that has a first diameter and a second diameter with the first diameter being greater than or equal to the second diameter and the ratio between the first and second diameter is between about 2.0 and about 2.35. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Yamauchi's invention by providing an elliptical duct that has a first diameter and a second diameter with the first diameter being greater than or equal to the second diameter and the ratio between the first and second diameter is between about 2.0 and about 2.35 in order to improve the heat transfer process, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art *In re Aller*, 105 USPQ 233.

17. As to claims 10, 11, 13, 23, 24, 26, 35, 36 and 38, Yamauchi substantially discloses the claimed invention, see rejection of claim 1 above, but does not disclose or provide the refrigerant

passing through the evaporator that is a CFC-refrigerant; a non CFC-refrigerant; or ammonia. It would have been obvious matter of design choice to provide refrigerant that is selected from a CFC-refrigerant; a non CFC-refrigerant; or ammonia in order to improve the heat transfer process, since the applicant has not disclosed that using a CFC-refrigerant; a non CFC-refrigerant; or ammonia solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with other refrigerant such as Freon; R-134A, etc...

18. As to claims 14, 15, 27, 28, 39 and 40, Yamauchi substantially discloses the claimed invention, see rejection of claim 1 above, but does not disclose or provide or disclose that the pressure passing through the evaporator is in the range of 100 to 200 psig. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Yamauchi's invention by allowing the pressure passing through the evaporator within the range of 100 to 200 psig in order to improve the heat transfer process, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art *In re Aller*, 105 USPQ 233.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nihir Patel whose telephone number is (571) 272-4803. The examiner can normally be reached on 7:30 to 4:30 every other Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patricia Bianco can be reached on (571) 272-4940. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Art Unit 3772



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11/26/07